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L36: Entry 1 of 3

File: JPAB

Sep 22, 1998

PUB-NO: JP410251108A

DOCUMENT-IDENTIFIER: JP 10251108 A

TITLE: INSECT ATTRACTANT AND CONTROL OF PEST BY USING THE SAME

PUBN-DATE: September 22, 1998

INVENTOR-INFORMATION:

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NORIN SUISANSYO NOGYO KENKYU CENTER SHOCHO	

APPL-NO: JP09055092

APPL-DATE: March 10, 1997

INT-CL (IPC): A01 N 47/46

ABSTRACT:

PROBLEM TO BE SOLVED: To obtain an insect attractant capable of efficiently exterminating pests, especially larvae of Scarabaeids by formulating allyl isothiocyanate, a plant including a mustard oil glycoside, etc., as an active ingredient.

SOLUTION: This insect attractant contains at least one kind selected from allyl isothiocyanate, or a plant containing a mustard oil glycoside, a tissue thereof or a treated material thereof, and mustard oils. The mustard oils are preferably semidrying oil obtained by squeezing seeds of Brassica juncea Czern. et Coss., Brassica nigra Koch, Sinapis alba L. or Rorippa nasturtium-aquaticum Hayek, or pulverizing the seeds, dipping the pulverized seeds into water and carrying out a steam distillation.

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End of Result Set

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L37: Entry 2 of 2

File: DWPI

Sep 22, 1998

DERWENT-ACC-NO: 1998-563026

DERWENT-WEEK: 199945

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TITLE: Insect attractants for control of insect pests - comprises
e.g. allyl isothiocyanate and plant extracts

PATENT-ASSIGNEE:

ASSIGNEE	CODE
NORINSUISANSHO NOGYO KENKYU	NORQ

PRIORITY-DATA: 1997JP-0055092 (March 10, 1997)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
<u>JP 10251108 A</u>	September 22, 1998		004	A01N047/46
JP 2952345 B2	September 27, 1999		004	A01N047/46

APPLICATION-DATA:

PUB-NO	APPL-DATE	APPL-NO	DESCRIPTOR
JP 10251108A	March 10, 1997	1997JP-0055092	
JP 2952345B2	March 10, 1997	1997JP-0055092	
JP 2952345B2		JP 10251108	Previous Publ.

INT-CL (IPC): A01 N 47/46; A01 N 65/00; A01 N 47/46; A01 N 65:00

ABSTRACTED-PUB-NO: JP 10251108A

BASIC-ABSTRACT:

Insect attractants contain allyl isothiocyanate (AITC), plant extracts, their tissue or their processed products containing mustard oil glycosides and/or mustard oils, particularly for larvae of chafers.

ADVANTAGE - The attractants are useful for the effective control of chafers larvae.

CHOSEN-DRAWING: Dwg.0/0

TITLE-TERMS: INSECT ATTRACT CONTROL INSECT PEST COMPRISE ALLYL ISOTHIOCYANATE PLANT EXTRACT

DERWENT-CLASS: C03

CPI-CODES: C04-A09; C04-A10; C04-B01C1; C10-A14; C14-B14;

SECONDARY-ACC-NO:

CPI Secondary Accession Numbers: C1998-168810

(19)日本国特許庁 (J P)

(12) 公開特許公報 (A)

(11)特許出願公開番号

特開平10-251108

(43)公開日 平成10年(1998)9月22日

(51)Int.Cl.^o

A 01 N 47/46

// (A 01 N 47/46

65:00)

識別記号

F I

A 01 N 47/46

審査請求 有 請求項の数7 O.L. (全4頁)

(21)出願番号

特願平9-55092

(22)出願日

平成9年(1997)3月10日

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(54)【発明の名称】 昆虫誘引剤及びそれを用いる害虫防除方法

(57)【要約】

【解決手段】 イソチオシアノ酸アリル又はカラシ油配糖体を含有する植物、その組織又はそれらの処理物、並びにカラシ油類からなる群から選ばれる少なくとも1種を有効成分として含有する昆虫誘引剤；当該昆虫誘引剤を施用箇所に置き、害虫の幼虫を誘引せしめることを特徴とする害虫誘引方法；並びに当該害虫誘引方法により誘引された害虫の幼虫を防除することを特徴とする害虫防除方法。

【効果】 本発明により、コガネムシ類の幼虫を効率よく防除することができる。

【特許請求の範囲】

【請求項1】 イソチオシアノ酸アリル又はカラシ油配糖体を含有する植物、その組織又はそれらの処理物、並びにカラシ油類からなる群から選ばれる少なくとも1種を有効成分として含有する昆虫誘引剤。

【請求項2】 昆虫がコガネムシ類の幼虫である請求項1記載の昆虫誘引剤。

【請求項3】 カラシ油類がイソチオシアノ酸アリルを含有する請求項1記載の昆虫誘引剤。

【請求項4】 カラシ油類がカラシナ(*Brassica juncea* Czern. et Coss.)、クロガラシ(*Brassica nigra* Koch)、シロガラシ(*Sinapis alba* L.)もしくはオランダガラシ(*Rorippa nasturtium-aquaticum* Hayek)の種子を圧搾して得られる半乾性油、又は前記種子を粉碎し、水に浸漬後、水蒸気蒸留して得られる半乾性油である請求項1記載の昆虫誘引剤。

【請求項5】 請求項1～4のいずれか1項に記載の昆虫誘引剤を施用箇所に置き、害虫の幼虫を誘引せしめることを特徴とする害虫誘引方法。

【請求項6】 請求項1～4のいずれか1項に記載の昆虫誘引剤を施用箇所に置き、害虫の幼虫を誘引せしめ、該幼虫を防除することを特徴とする害虫防除方法。

【請求項7】 害虫の幼虫がコガネムシ類の幼虫である請求項6記載の方法。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、昆虫誘引剤及びそれを用いて害虫、特にコガネムシ類の幼虫を防除する方法に関する。

【0002】

【従来の技術】コガネムシ類成虫は大豆をはじめ各種作物の葉を、幼虫は土中にあって大豆、サツマイモ等の作物の根を食害する。これまで、成虫に対しては殺虫剤の茎葉散布、幼虫に対しては殺虫剤の土壤処理を行ってきた。しかしながら、成虫に対する茎葉散布、幼虫に対する土壤処理は、効果が完璧とまでには今一つ至らない場合が多い。そこで、サツマイモの早出し地帯等、コガネムシ幼虫加害による商品価値の下落が著しいおそれのある場合には、線虫やハリガネムシ類(Wireworms)等の対策を兼ねてガス剤(臭化メチル、クロロピクリン(chloropicrin))による土壤消毒が主流を占めている。しかしながら、農村地帯での最近の急速な宅地化等でガス剤の使用が実際上困難になっている事例が少なくなく、また地球温暖化防止対策として臭化メチルの使用制限問題がある。一方、成虫は光、(雄については)雌の性フェロモン、食餌植物、産卵場所(堆肥等)等に誘引されることが知られている。しかしながら、超光性を利用したライトトラップは効力が弱く、フェロモントラップは雄だけしか誘引せず、食餌植物、産卵場所に関与する要因を利用した防除技術もまだ確立していない。

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【0003】

【発明が解決しようとする課題】本発明は、新規な昆虫誘引剤、及びそれを用いて害虫、特にコガネムシ類の幼虫を効率よく防除する方法を提供することを目的とする。

【0004】

【課題を解決するための手段】本発明は、以下の発明を包含する。

(1) イソチオシアノ酸アリル又はカラシ油配糖体(mustard oil glycoside)を含有する植物、その組織又はそれらの処理物、並びにカラシ油類(mustard oils)からなる群から選ばれる少なくとも1種を有効成分として含有する昆虫誘引剤。

(2) 昆虫がコガネムシ類(Scarabaeids)の幼虫である前記(1)に記載の昆虫誘引剤。

【0005】(3) カラシ油類がイソチオシアノ酸アリルを含有する前記(1)に記載の昆虫誘引剤。

(4) カラシ油類がカラシナ(*Brassica juncea* Czern. et Coss.)、クロガラシ(*Brassica nigra* Koch)、シロガラシ(*Sinapis alba* L.)もしくはオランダガラシ(*Rorippa nasturtium-aquaticum* Hayek)の種子を圧搾して得られる半乾性油、又は前記種子を粉碎し、水に浸漬後、水蒸気蒸留して得られる半乾性油である前記(1)に記載の昆虫誘引剤。

【0006】(5) 前記(1)～(4)のいずれかに記載の昆虫誘引剤を施用箇所に置き、害虫の幼虫を誘引せしめることを特徴とする害虫誘引方法。

(6) 前記(1)～(4)のいずれかに記載の昆虫誘引剤を施用箇所に置き、害虫の幼虫を誘引せしめ、該幼虫を防除することを特徴とする害虫防除方法。

(7) 害虫の幼虫がコガネムシ類の幼虫である前記

(6)に記載の方法。

【0007】本発明の対象となる害虫としては、例えばコガネムシ類(例えばドウガネブイブイ(*Anomala cuprea* a)、ヒメコガネ(*Anomala rufocuprea*)の幼虫が挙げられる。本発明の昆虫誘引剤の原料となる植物、その組織又はそれらの処理物としては、イソチオシアノ酸アリル又はカラシ油配糖体を含有するものであれば、特に制限はなく、例えばキャベツ葉、ナタネ葉、白菜、カラシナ類及びそれらの処理物が挙げられる。カラシナ類としては、例えばカラシナ(*Brassica juncea* Czern. et Coss.)、クロガラシ(*Brassica nigra* Koch)、シロガラシ(*Sinapis alba* L.)又はオランダガラシ(*Rorippa nasturtium-aquaticum* Hayek)の種子が挙げられる。

【0008】前記処理物としては、イソチオシアノ酸アリル又はカラシ油配糖体を含有するものであれば、特に制限はなく、例えば、前記植物又はその組織を、すりつぶし、粉碎し、圧搾し、又は抽出したものが挙げられる。抽出溶媒としては、イソチオシアノ酸アリル又はカラシ油配糖体を溶解するものであれば、特に制限はな

い。

【0009】「カラシ油(mustard oil)」には、「イソチオシアノ酸エステル」、「カラシナ類の種子を圧搾して得られる半乾性油」、「カラシナ類の種子を粉碎し、水に浸漬後、水蒸気蒸留して得られるもの」の3つの定義があるが（「化学大辞典2」（共立出版（株）発行）第515頁～第516頁参照）、本発明におけるカラシ油類(mustard oils)は、前記の3つの定義の全てを意味する。

【0010】イソチオシアノ酸エステルとしては、例えば、イソチオシアノ酸メチル、イソチオシアノ酸エチル、イソチオシアノ酸プロピル、イソチオシアノ酸イソプロピル、イソチオシアノ酸ブチル、イソチオシアノ酸イソブチル、イソチオシアノ酸イソアミル等のイソチオシアノ酸アルキル；イソチオシアノ酸アリル等のイソチオシアノ酸アルケニル；イソチオシアノ酸フェニル、イソチオシアノ酸p-トリル、イソチオシアノ酸ニトロフェニル等のイソチオシアノ酸アリール；イソチオシアノ酸ベンジル等のイソチオシアノ酸アラルキルが挙げられ、好ましくはイソチオシアノ酸アリルが挙げられる。

【0011】

【発明の実施の形態】本発明の昆虫誘引剤は、施用箇所に置くことにより、害虫の幼虫を誘引せしめることができる。こうして誘引された幼虫を防除することにより害虫の効率的防除が可能になる。施用箇所としては、例えば、作付前の裸地圃場、又は作付後の株間が挙げられ、施用の態様としては、例えば、土壤浅部への殺虫剤との混合施用が挙げられる。

【0012】本発明の昆虫誘引剤は、イソチオシアノ酸*

ドウガネブイブイ3齢幼虫のサツマイモ（生根）・キャベツ葉に対する誘引性
(風洞内放置60分後の幼虫数、括弧内の数字は%)

放置点よりの距離 臭源よりの距離	0-20cm			合計虫数
	53-33cm	33-13cm	13-0cm	
臭 源 なし（対照）	5 (72)	1 (14)	1 (14)	7 (100)
サツマイモ	4 (67)	1 (17)	1 (17)	6 (100)
キャベツ葉	3 (33)	2 (22)	4 (44)	9 (100)

【0016】（実施例2）ドウガネブイブイの3齢幼虫をアクリル製チューブ内に置き、他端に臭源を置いて18～20℃で放置し、10分後の移動距離を測定し、誘引性の指標とした（表2）。幼虫は、臭源なしに比べ

*アリル又はカラシ油配糖体を含有する植物、その組織もしくはそれらの処理物、又はカラシ油類をそのまま用いてもよく、また、目的に応じて、適当な、溶媒で希釈して、水溶剤、油剤として用いてもよく、更に乳化剤、浸透剤、安定剤、增量剤、結合剤、噴射剤等を添加して乳剤、粉剤、粒剤、エアゾール等の剤形として用いてよい。

【0013】イソチオシアノ酸アリル又は前記半乾性油を昆虫誘引剤として用いる場合には、適当な增量剤、及び食毒又は接触性殺虫剤と混合して施用することが好ましい。本発明の昆虫誘引剤の施用量は、昆虫誘引剤の種類等により異なるが、イソチオシアノ酸アリル又は前記半乾性油を昆虫誘引剤として用いる場合には、通常、コガネムシ幼虫が感知する位置にてカラシ油（香辛性物質35%含有）10～200μl程度又はイソチオシアノ酸アリル5μl程度の使用量で用いる。

【0014】

【実施例】以下、実施例により本発明を更に具体的に説明するが、本発明の範囲はこれらに限定されるものではない。

（実施例1）ドウガネブイブイ(*Anomala cuprea*)の3齢幼虫をアクリル製チューブ内に置き、他端に臭源を置いて16～24℃で放置し、60分後の移動距離を測定し、誘引性の指標とした（表1）。幼虫は、臭源なし・サツマイモ（生根；細断生いも）に比べて、キャベツ葉（軽く押しつぶしたもの）に明らかにより強く誘引された（表1）。

【0015】

【表1】
ドウガネブイブイ3齢幼虫のサツマイモ（生根）・キャベツ葉に対する誘引性
(風洞内放置60分後の幼虫数、括弧内の数字は%)

※、ナタネ葉、白菜（緑色部）（いずれも生のすりつぶし）にあきらかにより強く誘引された（表2）。

【0017】

【表2】

5
 ドウガネブイブイ3齢幼虫のナタネ葉・白菜に対する誘引性
 (風洞内放置10分後の幼虫数、括弧内の数字は%)

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放置点よりの距離		0-20cm	20-40cm	40-53cm	合計虫数
臭 源	なし (対照)	35 (83)	4 (10)	3 (7)	42 (100)
	ナタネ葉	18 (43)	7 (17)	17 (40)	42 (100)
	白 菜	11 (26)	6 (14)	25 (60)	42 (100)

【0018】(実施例3) ドウガネブイブイの3齢幼虫をアクリル製チューブ内に置き、他端に臭源を置いて18~20℃で放置し、10分後の移動距離を測定し、誘引性の指標とした(表3)。幼虫は、対照(臭源: 75%エタノール)に比べて、ナタネ葉エタノール抽出液

* (生葉5gに対して等重量の100%エタノールを加えて粉砕した上澄み液を使用)に強く誘引された(表3)。

【0019】

【表3】
 ドウガネブイブイ3齢幼虫のナタネ葉エタノール抽出液に対する誘引性

(風洞内放置10分後の幼虫数、括弧内の数字は%)

臭 源	放置点よりの距離			合計虫数
	0-20 cm	20-40cm	40-53cm	
75%エタノール(対照)	21 (88)	0 (0)	3 (12)	24 (100)
ナタネ葉エタノール抽出液	6 (25)	4 (17)	14 (58)	24 (100)

【0020】(実施例4) ドウガネブイブイの3齢幼虫をアクリル製チューブ内に置き、他端に臭源を置いて18~20℃で放置し、5分後の移動距離を測定し、誘引性の指標とした(表4)。幼虫は、臭源なしに比べて、

* 有する香辛性物質35%含有、10~200μl)、イソチオシアノ酸アリル(AITC、5μl)に明らかな誘引性を示した(表4)。

【0021】
 カラシ油 (mustard oils; イソチオシアノ酸アリルを含※

ドウガネブイブイ3齢幼虫のカラシ油・AITCに対する誘引性
 (18~20℃、風洞内放置5分後の幼虫数、括弧内の数字は%)

臭 源	触角	放置点よりの距離				合計虫数
		0-25cm	25-50cm	50-75cm	75-100cm	
なし (対照)	正常	109 (87)	3 (2)	7 (6)	6 (5)	125 (100)
カラシ油 200μl	正常	7 (44)	7 (44)	0 (0)	2 (12)	16 (100)
カラシ油 10μl	正常	2 (8)	6 (24)	6 (24)	11 (44)	25 (100)
カラシ油 10μl	除去	40 (63)	13 (20)	7 (11)	4 (6)	64 (100)
AITC 5μl	正常	15 (47)	4 (12)	1 (3)	12 (38)	32 (100)

【0022】

★率よく防除することができる。よって、本発明は農作物

【発明の効果】本発明により、コガネムシ類の幼虫を効★

を食害する害虫の防除技術として広く利用できる。

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 10-251108

(43)Date of publication of application : 22.09.1998

(51)Int.Cl.

A01N 47/46
// (A01N 47/46
A01N 65:00)

(21)Application number : 09-055092

(71)Applicant : NORIN SUISANSYO NOGYO
KENKYU CENTER SHOCHO

(22)Date of filing : 10.03.1997

(72)Inventor : MOCHIDA TSUKURU
KIKUCHI ATSUSHI

(54) INSECT ATTRACTANT AND CONTROL OF PEST BY USING THE SAME

(57)Abstract:

PROBLEM TO BE SOLVED: To obtain an insect attractant capable of efficiently exterminating pests, especially larvae of Scarabaeids by formulating allyl isothiocyanate, a plant including a mustard oil glycoside, etc., as an active ingredient.

SOLUTION: This insect attractant contains at least one kind selected from allyl isothiocyanate, or a plant containing a mustard oil glycoside, a tissue thereof or a treated material thereof, and mustard oils. The mustard oils are preferably semidrying oil obtained by squeezing seeds of Brassica juncea Czern. et Coss., Brassica nigra Koch, Sinapis alba L. or Rorippa nasturtium-aquaticum Hayek, or pulverizing the seeds, dipping the pulverized seeds into water and carrying out a steam distillation.

LEGAL STATUS

[Date of request for examination] 10.03.1997

[Date of sending the examiner's decision of
rejection]

[Kind of final disposal of application other than
the examiner's decision of rejection or
application converted registration]

[Date of final disposal for application]

[Patent number] 2952345

[Date of registration] 16.07.1999

[Number of appeal against examiner's
decision of rejection]

[Date of requesting appeal against examiner's
decision of rejection]

[Date of extinction of right]

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CLAIMS

[Claim(s)]

[Claim 1] The vegetation containing an allyl isothiocyanate or a mustard oil glycoside, its organization or those processing objects, and the insect attractant that contains at least one sort chosen from the group which consists of mustard oil as an active principle.

[Claim 2] The insect attractant according to claim 1 whose insect is a larva of scarab beetles.

[Claim 3] The insect attractant according to claim 1 in which mustard oil contains an allyl isothiocyanate.

[Claim 4] Mustard oil is a cress (Brassica juncea Czern. et Coss.), clo GARASHI (Brassica nigra Koch), and SHIROGARASHI (Sinapis alba L.). Or insect attractant according to claim 1 which is semi-drying oil obtained by grinding the semi-drying oil which squeezes the seed of watercress (Rorippa nasturtium-aquaticum Hayek), and is obtained, or the aforementioned seed, and carrying out steam distillation to water after being immersed.

[Claim 5] The vermin attraction method characterized by putting an insect attractant given in any 1 term of claims 1-4 on a use part, and making the larva of a vermin attract.

[Claim 6] The insect-pest-control method characterized by putting an insect attractant given in any 1 term of claims 1-4 on a use part, making the larva of a vermin attract, and preventing this larva.

[Claim 7] The way according to claim 6 the larva of a vermin is a larva of scarab beetles.

[Translation done.]

* NOTICES *

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to the method of preventing a noxious insect, especially the larva of scarab beetles using an insect attractant and it.

[0002]

[Description of the Prior Art] Including an soybean, in the leaf of various crops, a larva has a scarab beetle imago in soil, and it damages the root of crops, such as an soybean and a sweet potato. Until now, to an imago, soil treatment of an insecticide has been performed to the foliage application of an insecticide, and a larva. However, the soil treatment to the foliage application and the larva to an imago does not result that an effect is perfect in until in many cases more. then -- the case where a sweet potato attends early and there is fear that the fall of the goods value by scarab beetle larva injury, such as a zone, is remarkable -- a nematode and hairworms (Wireworms) etc. -- the soil sterilization by the gas agent (a methyl bromide, chloropicrin (chloropicrin)) occupies the mainstream to serve also as a cure. However, there are not few examples from which use of a gas agent is difficulty in practice by the latest rapid residential land development in an agricultural area etc., and there is a use limit problem of a methyl bromide as a cure against global warming prevention. On the other hand, it is known that an imago will be induced the sexual pheromone of light and a female (male), a food plant, spawning ground places (bank barnyard manure etc.), etc. However, the light trap using ***** has a weak effect, a pheromone trap attracts only a male, and the prevention technology using the factor which participates in a food plant and a spawning ground place is not established yet, either.

[0003]

[Problem(s) to be Solved by the Invention] this invention aims at offering a new insect attractant and the method of preventing a noxious insect, especially the larva of scarab beetles efficiently using it.

[0004]

[Means for Solving the Problem] this invention includes the following invention.

(1) An allyl isothiocyanate or mustard oil glycoside (mustard oil glycoside) The vegetation to contain, its organization or those processing objects, and insect attractant that contains at least one sort chosen from the group which consists of mustard oil (mustard oils) as an active principle.

(2) Insects are scarab beetles (Scarabaeids). Insect attractant given in the above (1) which is a larva.

[0005] (3) An insect attractant given in the above (1) whose mustard oil contains an allyl isothiocyanate.

(4) Mustard oil is a cress (Brassica juncea Czern. et Coss.), clo GARASHI (Brassica nigra Koch), and SHIROGARASHI (Sinapis alba L.). Or insect attractant given in the above (1) which is semi-drying oil obtained by grinding the semi-drying oil which squeezes the seed of watercress (Rorippa nasturtium-aquaticum Hayek), and is obtained, or the aforementioned seed, and carrying out steam distillation to water after being immersed.

[0006] (5) The above (1) The noxious insect invitation method characterized by putting an insect attractant given in either of - (4) on a use part, and making the larva of a noxious insect attract.

(6) The above (1) The insect-pest-control method characterized by putting an insect attractant given in either of - (4) on a use part, making the larva of a noxious insect attract, and preventing this larva.

(7) A method given in the above (6) whose larva of a noxious insect is a larva of scarab beetles.

[0007] As a noxious insect set as the object of this invention, they are scarab beetles (for example, the larva of a DOUGANE buoy buoy (*Anomala cuprea*) and a soybean beetle (*Anomala rufocuprea*) is mentioned.), for example. As the vegetation used as the raw material of the insect attractant of this invention, its organization, or those processing objects, if an allyl isothiocyanate or a mustard oil glycoside is contained, there will be especially no limit, for example, a cabbage leaf, a NATANE leaf, Chinese cabbage, cresses, and those processing objects will be mentioned. As cresses, they are a cress (*Brassica juncea* Czern. et Coss.), clo GARASHI (*Brassica nigra* Koch), and SHIROGARASHI (*Sinapis alba* L.), for example. Or the seed of watercress (*Rorippa nasturtium-aquaticum* Hayek) is mentioned.

[0008] As the aforementioned processing object, if an allyl isothiocyanate or a mustard oil glycoside is contained, there will be especially no limit, for example, what mashed, ground, squeezed or extracted the aforementioned vegetation or its organization will be mentioned. As an extracting solvent, if an allyl isothiocyanate or a mustard oil glycoside is dissolved, there will be especially no limit.

[0009] In "mustard oil (mustard oil)" A "isothiocyanate", "the semi-drying oil which squeezes the seed of cresses and is obtained", Although there are three definitions of "what is obtained" by grinding the seed of cresses and carrying out steam distillation to water after being immersed (refer to 515th page - the "chemistry great dictionary 2" (Kyoritsu shuppan Co., Ltd. issue) 516th page) The mustard oil (mustard oils) in this invention means all three aforementioned definitions.

[0010] As an isothiocyanate, for example A methyl isothiocyanate, Isothiocyanic acid ethyl, an isothiocyanic acid propyl, an isothiocyanic acid isopropyl, Isothiocyanic acid alkenyl [, such as an isothiocyanic acid alkyl; allyl isothiocyanate], such as isothiocyanic acid butyl, an isothiocyanic acid isobutyl, and an isothiocyanic acid isoamyl; A phenyl isothiocyanate, Allyl isothiocyanates, such as isothiocyanic acid p-tolyl and isothiocyanic acid nitrophenyl; isothiocyanic acid aralkyls, such as an isothiocyanic acid benzyl, are mentioned, and an allyl isothiocyanate is mentioned preferably.

[0011]

[Embodiments of the Invention] The insect attractant of this invention can make the larva of a vermin attract by putting on a use part. In this way, efficient prevention of a vermin is attained by preventing the attracted larva. As a use part, the bare field field in front of cropping or the interval between roots after cropping is mentioned, and mixed use with the insecticide to a soil superficial part is mentioned as a mode of use, for example.

[0012] The vegetation containing an allyl isothiocyanate or a mustard oil glycoside, its organization, those processing objects, or mustard oil may be used for the insect attractant of this invention as they are, and according to the purpose, it may be diluted with a suitable solvent and may be used for it as water soluble powders and an oily medicine, and it may add an emulsifier, a penetrating agent, a stabilizer, an extending agent, a binder, an injection agent, etc. further, and they may be used for it as dosage forms, such as an emulsion, powder material, a granule

[0013] When using an allyl isothiocyanate or the aforementioned semi-drying oil as an insect attractant, it is desirable to mix with a suitable extending agent and a stomach poison, or a contact nature insecticide, and to use it. Although the amount of application of the insect attractant of this invention changes with kinds of insect attractant etc., when using an allyl isothiocyanate or the aforementioned semi-drying oil as an insect attractant, it is usually used in the position which a scarab beetle larva senses by about 1 10-200micro mustard oil (35% content of ***** matter), or the 5micro allyl isothiocyanate [about 1] amount used.

[0014]

[Example] Hereafter, although an example explains this invention still more concretely, the range of this invention is not limited to these.

(Example 1) 3 age larva of a DOUGANE buoy buoy (*Anomala cuprea*) was placed into the tube made from an acrylic, **** was put on the other end, it was left at 16-24 degrees C, the travel of 60 minutes after was measured, and it considered as the index of attractiveness (Table 1). The larva was attracted to

a cabbage leaf (what was crushed lightly) clear more strongly compared with ****-less - sweet potato (raw solution; shredding student potato) (Table 1).

[0015]

[Table 1]

ドウガネブイブイ 3 齢幼虫のサツマイモ (生根) ・ キャベツ
葉に対する誘引性

(風洞内放置60分後の幼虫数、括弧内の数字は%)

放置点よりの距離 臭源よりの距離		0-20cm 53-33cm	20-40cm 33-13cm	40-53cm 13- 0cm	合計虫数
臭 源	なし (対照)	5 (72)	1 (14)	1 (14)	7 (100)
	サツマイモ	4 (67)	1 (17)	1 (17)	6 (100)
	キャベツ葉	3 (33)	2 (22)	4 (44)	9 (100)

[0016] (Example 2) 3 age larva of a DOUGANE buoy buoy was placed into the tube made from an acrylic, **** was put on the other end, it was left at 18-20 degrees C, the travel of 10 minutes after was measured, and it considered as the index of attractiveness (Table 2). The larva was compared without **** and it was induced to a rapeseed leaf and Chinese cabbage (green section) (trituration raw in all) clear more strongly (Table 2).

[0017]

[Table 2]

ドウガネブイブイ 3 齢幼虫のナタネ葉・白菜に対する誘引性
(風洞内放置10分後の幼虫数、括弧内の数字は%)

放置点よりの距離		0-20cm	20-40cm	40-53cm	合計虫数
臭 源	なし (対照)	35 (83)	4 (10)	3 (7)	42 (100)
	ナタネ葉	18 (43)	7 (17)	17 (40)	42 (100)
	白 菜	11 (26)	6 (14)	25 (60)	42 (100)

[0018] (Example 3) 3 age larva of a DOUGANE buoy buoy was placed into the tube made from an acrylic, **** was put on the other end, it was left at 18-20 degrees C, the travel of 10 minutes after was measured, and it considered as the index of attractiveness (Table 3). The larva was strongly attracted to a rapeseed leaf ethanol extract (the supernatant which added 100% ethanol of same weight and was ground to 5g of green leaves is used) compared with contrast (**** : 75% ethanol) (Table 3).

[0019]

[Table 3]

ドウガネブイブイ3齢幼虫のナタネ葉エタノール抽出液
に対する誘引性
(風洞内放置10分後の幼虫数、括弧内の数字は%)

臭 源	放置点よりの距離			合計虫数
	0-20 cm	20-40cm	40-53cm	
75%エタノール(対照)	21 (88)	0 (0)	3 (12)	24 (100)
ナタネ葉エタノール抽出液	6 (25)	4 (17)	14 (58)	24 (100)

[0020] (Example 4) 3 age larva of a DOUGANE buoy buoy was placed into the tube made from an acrylic, **** was put on the other end, it was left at 18-20 degrees C, the travel of 5 minutes after was measured, and it considered as the index of attractiveness (Table 4). The larva was compared without **** and showed attractiveness clear to mustard oil (35% content containing a mustard oils; allyl isothiocyanate of ***** matter, 10-200microl), and an allyl isothiocyanate (AITC, 5microl) (Table 4).

[0021]

[Table 4] ドウガネブイブイ3齢幼虫のカラシ油・AITCに対する誘引性
(18~20℃、風洞内放置5分後の幼虫数、括弧内の数字は%)

臭 源	触角	放置点よりの距離				合計虫数
		0-25cm	25-50cm	50-75cm	75-100cm	
なし(対照)	正常	109 (87)	3 (2)	7 (6)	6 (5)	125 (100)
カラシ油 200μl	正常	7 (44)	7 (44)	0 (0)	2 (12)	16 (100)
カラシ油 10μl	正常	2 (8)	6 (24)	6 (24)	11 (44)	25 (100)
カラシ油 10μl	除去	40 (63)	13 (20)	7 (11)	4 (6)	64 (100)
AITC 5μl	正常	15 (47)	4 (12)	1 (3)	12 (38)	32 (100)

[0022]

[Effect of the Invention] By this invention, the larva of scarab beetles can be prevented efficiently. Therefore, this invention can be widely used as prevention technology of the vermin which damages agricultural products.

[Translation done.]